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Enantio- and Diastereoselective Construction of Vicinal C(sp^3) Centres via Nickel-Catalysed Hydroalkylation of Alkenes
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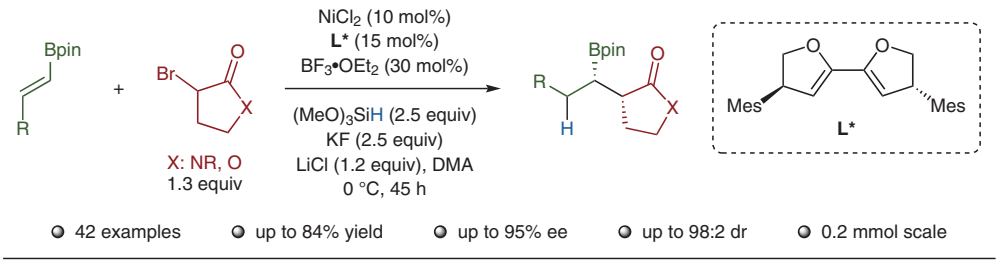
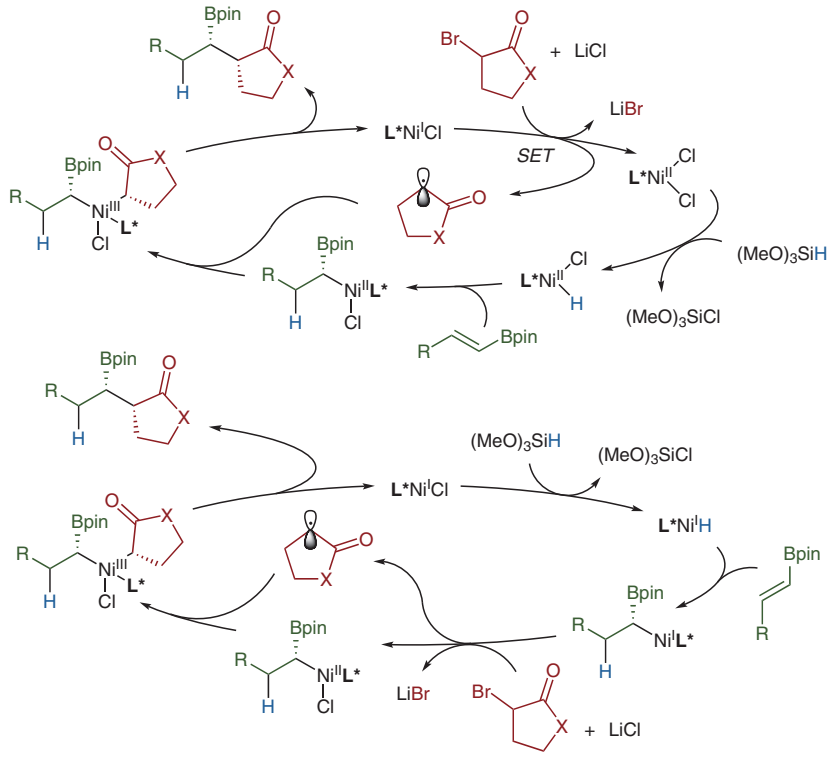
Ni-Catalyzed Formation of Two Vicinal Enantioenriched C(sp^3) Centers Stemming from Two Starting Materials



Proposed mechanisms:



Significance: The Hu group reports the first enantio- and diastereoselective Ni-catalyzed hydroalkylation of prochiral alkenes with a racemic mixture of a chiral alkyl halide. This report is the first example where control of a C(sp^3)–C(sp^3) bond formation occurs stereoselectively, as previous methodologies only lead to poor or modest diastereoselectivities.

Comment: The reaction generates products containing enantioenriched alkyl boronate and alkyl lactam moieties, which are both useful intermediates in organic synthesis. A 'time study' revealed that the racemic alkyl halides react through an enantioconvergent process instead of a kinetic resolution.

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Category
Metals in Synthesis

Key words
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hydroalkylation
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diastereoselectivity
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